



Product Service Manual

Effective Date: 12/13/05

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Introduction

PURPOSE –

This Service Manual establishes the process used by SenTech Medical Systems, Inc. ("SenTech") to authorize and control product service done by customers on SenTech products. This manual is controlled by SenTech procedure 315-011, *Authorized Customer Service*.

SCOPE –

Applies to all SenTech products referenced in this manual and for which SenTech authorizes customer service.

DEFINITIONS –

- **Authorized Product Service ("Service")** – Product service specifically defined/authorized by SenTech that can be performed by the customer on *released* SenTech products and can include evaluation, repair, upgrade/retrofit, testing and/or calibration.
- **Competency** – The ability of a person to complete an assigned job/task according to defined requirements. Service competency is demonstrated by providing objective evidence of training, education and/or experience to perform a job or task. This can include resumes, training/educational certificates/degrees, past experience, etc.
- **Service Training** – Training provided by SenTech for customers and that must be successfully completed prior to performing any product service.
- **Customer Service Work Order** – Record of Service done by a customer on SenTech products.
- **Service Reporting** – Regulatory requirement for Service done by the customer to be documented and reported to the manufacturer at planned intervals.
- **Service Record** – Consists of the completed *Customer Service Work Order*.

PROCEDURE – All service performed on SenTech products must be completed according to the procedures presented in this Service Manual or other procedures provided and approved by SenTech as a Service Exception. Service can *only* be done if all of the following requirements are met:

1. Personnel at the customer location performing the Service are:
 - ☒ Listed on the approved *Product Service Authorization, form 415-011A*.
See **Appendix 1**.
 - ☒ Deemed competent and authorized by SenTech.
 - ☒ Trained by SenTech on Product Service.
2. Customer has received an approved *Product Service Authorization Form (415-011A)* from SenTech.
3. Service performed by the customer is:
 - ☒ *Authorized* by SenTech as specified in this Service Manual or by written approval of a Service Exception.
 - ☒ Completed according to service procedures established/provided by SenTech.
 - ☒ Completed using parts/components obtained from and/or approved by SenTech.

Sentry 1200 & Primary Care

PRODUCT(S):	Sentry 1200 / Primary Care Electronic Controllers
PART #:	04-SM1200 / 04-SM600 LAL, AP & AC
SERVICE:	Replace Electrical Socket
SENTECH REPLACEMENT PART #:	EK-SF, Electrical Socket

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

1. Turn the controller so that it is laying on its front.
2. Using a #1 phillips-head screwdriver, remove the seven (7) screws from the back recesses. Remove the two screws found under the handles.
3. Carefully lift the back from the front, pulling straight up.
4. Set the back aside and keep all of the screws.
5. Disconnect the BLACK, WHITE and GREEN wire connectors from the terminals on the socket.
6. Remove the two (2) socket mounting screws and nuts then remove socket from case. Retain all hardware for reuse.
7. Install the new socket and secure with screws and nuts. See **Diagram 1** for orientation. Do not over tighten.
8. Reconnect wires according to **Diagram 2** and in the following order:
 - First, GREEN to the socket terminal closest to the front of the controller case
 - Second, WHITE to the middle socket terminal
 - Third, BLACK to the socket terminal closest to the back of the controller case

Diagram 1

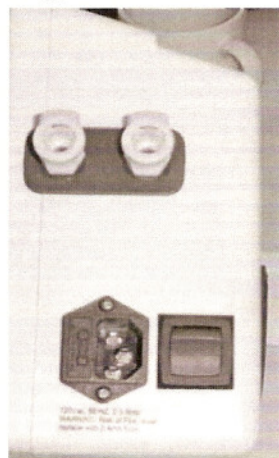
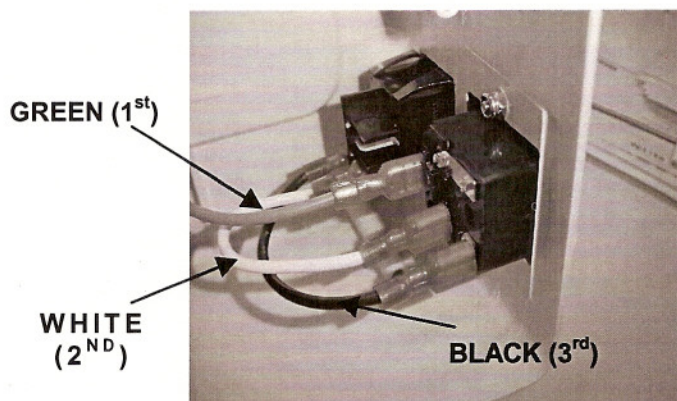


Diagram 2



LOOKING AT THE BACK OF CONTROLLER

CAUTION! FAILURE TO CONNECT THESE WIRES CORRECTLY WILL DAMAGE THE ELECTRONIC CONTROLLER AND COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

9. Carefully fit the back onto the front. Make sure not to pinch or kink any of the tubing and be sure the display is against the two "standoff tabs". **DO NOT force the back on!** When the sides are flush, install the seven long screws through the recesses. Tighten until snug, but do not over tighten. Over tightening may crack the plastic.
10. Install the two smaller screws under the handles. Do not over tighten.
11. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

PRODUCT:	Sentry 1200 / Primary Care Electronic Controllers
PART #:	04-SM1200 / 04-SM600 LAL, AP & AC
SERVICE:	Replace Broken Handle(s)/Replace Rear Cover
SENTECH REPLACEMENT PART #:	00A1203, Small Controller Back with Handles

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

1. Turn the controller so that it is laying on its front.
2. *Accurately* transfer information on the current Serial # and BioMed labels to the new labels that have been supplied by SenTech Medical Systems.

IMPORTANT! Make sure that the serial number and BioMed information on the *new* labels is correct!

3. Remove and discard the existing "Warranty Void if Sticker Broken", Serial # and BioMed labels.
4. Using a #1 phillips-head screwdriver, remove the seven (7) screws from the back recesses. Remove the two screws found under the handles.
5. Carefully lift the back from the front, pulling straight up.
6. Discard back, but keep all of the hardware.
7. Taking care not to pinch or kink any of the tubing, carefully slide the new back onto the front. Also, be sure the display is against the two standoff tabs. **DO NOT force the back on!** When the sides are flush, install the seven long screws through the recesses. Tighten until snug, but do not over tighten. Over tightening may crack the plastic.
8. Install the two smaller screws under the handles. Do not over tighten.
9. Place the *new* "Warranty Void if Sticker Broken" label in the same position as the previous back.
10. Place the *new* Serial # and BioMed labels on the new back in the same position as the previous back.
11. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

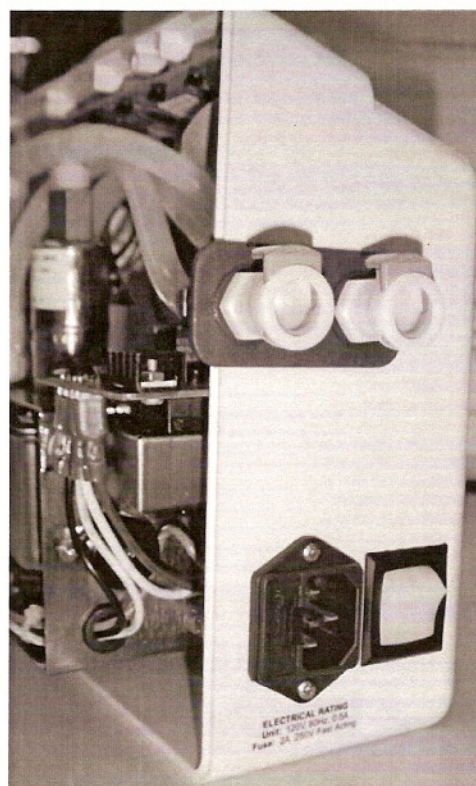


PRODUCT:	Sentry 1200 / Primary Care Electronic Controllers
PART #:	04-SM1200 / 04-SM600 LAL, AP & AC
SERVICE:	Replace Air Socket
SENTECH REPLACEMENT PART #:	DP-P10408

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

1. Remove and discard the existing "Warranty Void if Sticker Broken" and BioMed labels.
2. Using a #1 phillips-head screwdriver, remove the seven (7) screws from the back recesses. Remove the two screws found under the handles.
3. Carefully lift the back from the front, pulling straight up.
4. Slide old air socket off of front half of case, do not disconnect any hoses from air socket at this time.
5. Remove quick disconnects from old air socket and install into new air socket.
6. Install new air socket, connecting hoses one at a time to ensure correct orientation and operation.
7. Using a small hammer and a block of wood, tap socket making sure that it bottoms on the case.
8. Taking care not to pinch or kink any of the tubing, carefully slide the rear cover back onto the front. Also, be sure the display is against the two standoff tabs. **DO NOT force the back on!** When the sides are flush, install the seven long screws through the recesses. Tighten until snug, but do not over tighten. Over tightening may crack the plastic.
9. Install the two smaller screws under the handles. Do not over tighten.
10. Place the *new* "Warranty Void if Sticker Broken" label in the same position.
11. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

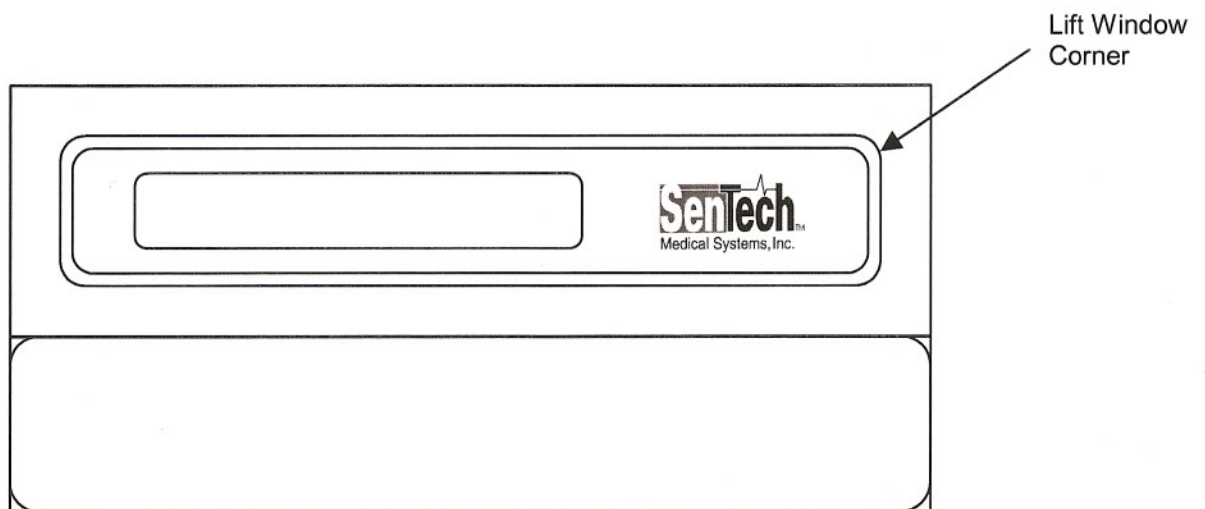


PRODUCT(S):	<i>Sentry 1200 Controller</i>
PART #:	<i>04-SM1200</i>
SERVICE:	<i>Replace Window Inlay</i>
SENTECH REPLACEMENT PART #:	<i>IL-P10425</i>

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

1. Using a thin blade or pen knife, lift one corner of window.
2. Pull the raised corner until you completely pull window off of case.
3. Install new window over display.
4. Plug unit in, turn on, check display and touch pad operation. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

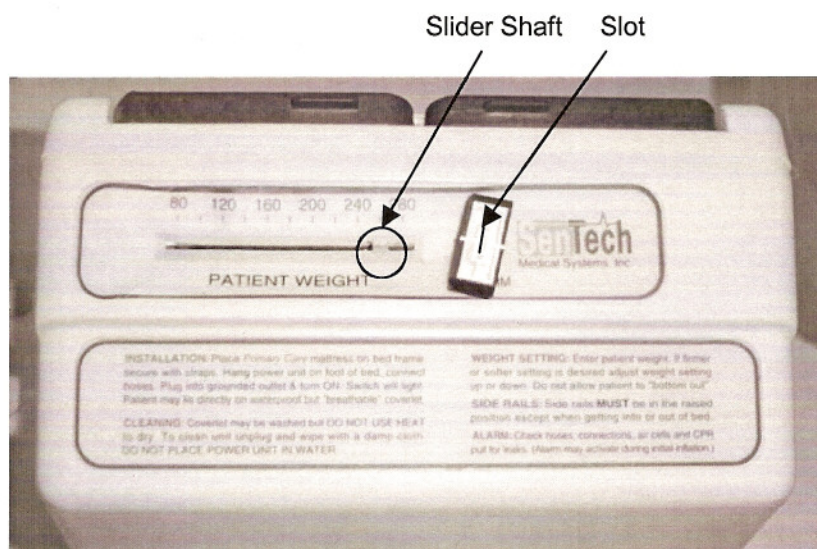


PRODUCT(S):	Primary Care Electronic Controller
PART #:	04-SM600 LAL, AP & AC
SERVICE:	Replace slider knob
SENTECH REPLACEMENT PART #:	HK-1

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

1. Obtain a new knob from SenTech Medical Systems.
2. Use a small scissors to make two (2) notches on the corners of the slider shaft.
3. Apply a very small amount of super glue into slot of knob.
4. Push knob onto the slider control shaft.
5. Plug unit in, turn on, check operation. If problems are encountered, contact SenTech Customer Service at 954-340-0500.



Stage IV & Millennium

PRODUCT(S):	Stage IV & Millennium
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus 23-SM-MIL3 / 23-SM-MIL3-Plus / 24-SM-MILTT / 24-SM-MILT-Plus
SERVICE:	Replace Air Intake Filter and Retainer
SENTECH REPLACEMENT PART #:	MF-F60G, MF-GFR

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

Replacing Air Intake Filter

REPAIR PROCEDURE:

1. Air intake filter (MF-F60G) is replaced by applying slight pressure on the grill holding the filter in place and unhooking Filter Retainer Assy (MF-GFR).
2. Replace Filter and re-hook Filter Retainer. (See **Diagram 1**)
3. To replace filter guard, remove the four (4) black snap rivets by prying up with a small to medium flat head screwdriver. Install new filter guard by snapping the filter guard back into place using four (4) new black snap rivets.
4. Plug unit in, turn on, check display and touch pad operation. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

Replacing Air Filter Retainer

REPAIR PROCEDURE:

1. Lay unit on it's front.
2. Using an 8" long #2 Phillips screwdriver, remove rear cover by removing the ten (10) 6/32 x 3/8 screws. Note: two of the screws are located in the center of the two black rubber bumpers on the rear cover.
3. On the upper right side of the wrapper, remove two (2) 8x32 3/8 screws.
4. On lower right side rear remove 6/32 flat head screw.
5. Using a #1 Phillips head screwdriver, a ¼ inch box or open end wrench or a long pair of hemostats, remove the four (4) 4x40 x1" screws and nuts going through the retainer and cooling fan.
6. Install new filter and retainer (See **Diagram 2** for correct orientation of retainer assembly to bottom cover).
7. When re-installing fan, note the air flow and fan rotation arrows on the side of the fan. Make sure that the air flow direction arrows point upwards (into the unit). Tighten the four (4) 4x40x1" screws until fan is snug. DO NOT overtighten or fan will bind.
8. Reinstall side wrapper screws, lower right rear screw, and rear cover.
9. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

Diagram 1

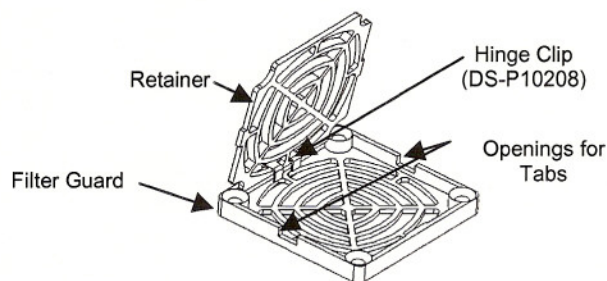
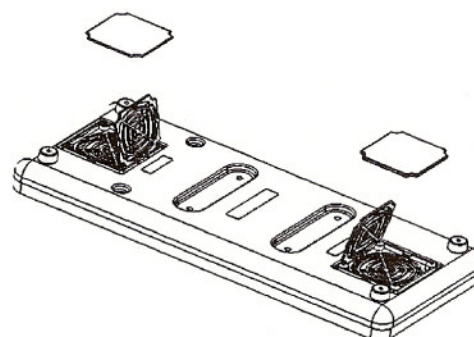


Diagram 2



PRODUCT(S):	Stage IV & Millennium
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus 23-SM-MIL3 / 23-SM-MIL3-Plus / 24-SM-MILTT / 24-SM-MILT-Plus
SERVICE:	Replace Quick Disconnect
SENTECH REPLACEMENT PART #:	CQ-FP1 and/or CQ-MP1

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

Note: For newer models of Stage IV 3000, and Millennium Controllers, rear cover removal is required if broken quick disconnect is from the half air socket.

1. Take a flat 5/16" screwdriver and unscrew the broken part of the air socket.
2. Wrap the threads of the replacement quick disconnect with Teflon pipe thread tape.
3. Screw the new part into where the broken part was taken out and tighten with the appropriate size wrench (5/8" or 9/16") until secure. **DO NOT OVERTIGHTEN**
4. Plug unit in, turn on, check display and touch pad operation. Perform Biomed and Release Testing only if rear cover was removed. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

PRODUCT(S):	Stage IV & Millennium
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus 23-SM-MIL3 / 23-SM-MIL3-Plus / 24-SM-MILTT / 24-SM-MILT-Plus
SERVICE:	Replace LAL Quick Disconnect
SENTECH REPLACEMENT PART #:	CQ-MB5

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

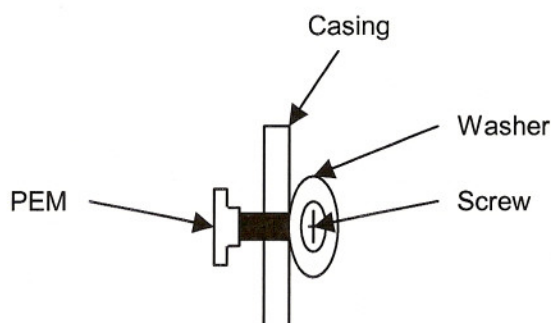
1. Using an 8" long #2 Phillips screwdriver, remove rear cover of unit by removing the ten (10) 6/32 x 3/8 screws. Note: two of the screws are located in the center of the two back rubber bumpers on the rear cover.
2. On the upper right side of the wrapper, remove two (2) 8x32 3/8 screws.
3. On lower right side rear remove 6/32 flat head screw.
4. Prop the left side of the controller open and use a pair of pliers to hold the LAL air socket.
5. Take a 5/16" screwdriver and unscrew the broken part of the air socket.
6. Screw the new part into where the broken part was taken out and tighten with the appropriate size wrench (5/8" or 9/16") until secure. **DO NOT OVERTIGHTEN**
7. Reinstall side wrapper screws, lower right rear screw, and rear cover.
8. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

PRODUCT(S):	Stage IV & Millennium
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus 23-SM-MIL3 / 23-SM-MIL3-Plus / 24-SM-MILTT / 24-SM-MILT-Plus
SERVICE:	Replace PEMS
SENTECH REPLACEMENT PART #:	HN-P-1

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

1. Using an 8" long #2 Phillips screwdriver, remove rear cover of unit by removing the ten (10) 6/32 x 3/8 screws. Note: two of the screws are located in the center of the two black rubber bumpers on the rear cover
2. If original pem is found in unit, use it to replace the missing one.
3. Using a 6/32" x 1/4" screw and a #6 flat washer, position the Pem in the hole where the missing pem was and thread the combination of screw and washer into pem. (see Diagram)
4. Pull the pem up keeping the pem centered in the hole.
5. Tighten the screw until secure.
6. Unscrew the screw and washer from the pem. The pem should remain in the case.
7. Reinstall rear cover.
8. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

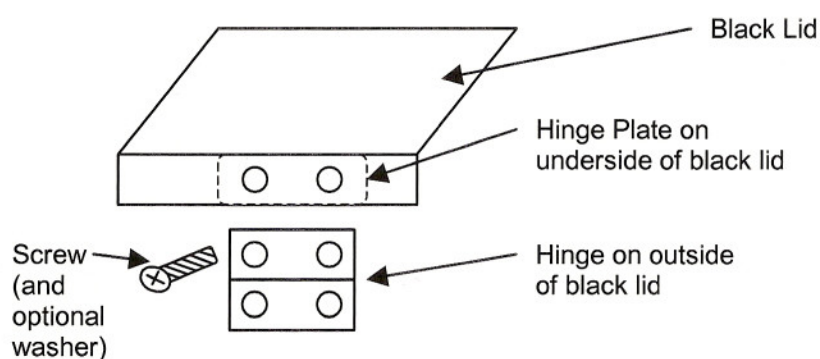


PRODUCT(S):	Stage IV 2000, 3000 & 3000 Plus
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus
SERVICE:	Replace Black Lid
SENTECH REPLACEMENT PART #:	DP-P10210

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

1. Remove damaged black lid by removing four (4) screws from the hinge and hinge plate.
2. Obtain new black lid and assemble black lid reusing hinges, hinge plates, screws, and star washers. (see Diagram)
3. Re-attach the black lid assembly using four (4) 4-40 nut, four (4) 4-40 screws, and star washer if necessary.
4. Reinstall rear cover.



Note: Screws are attached from the outside of the black lid through to the hinge plate. (sandwiching the black lid)

PRODUCT(S):	Stage IV 2000, 3000 & 3000 Plus
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus
SERVICE:	Replace Hardwired AC Power Cord
SENTECH REPLACEMENT PART #:	EH-CO1, EK-CT18 (3)

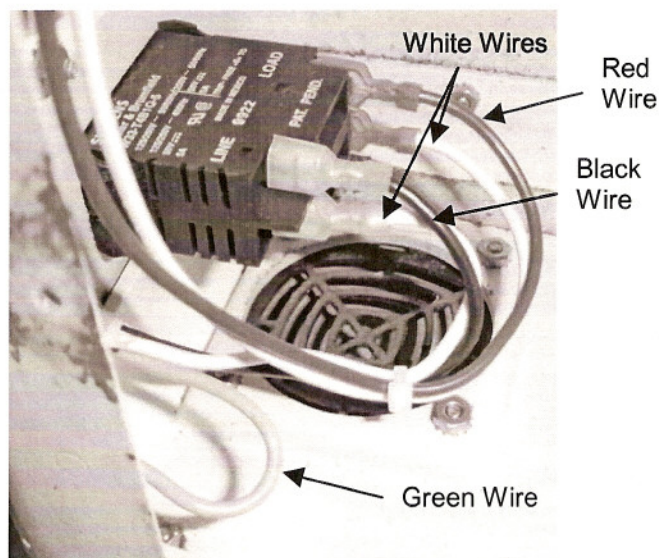
CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

Removing old AC power cord

REPAIR PROCEDURE:

1. Using an 8" long #2 Phillips screwdriver, remove rear cover unit by removing the ten (10) 6/32 x 3/8 screws. Note: two of the screws are located in the center of the two black rubber bumpers on the rear cover.
2. Disconnect old power cord observing how cord was connected to system black, white, and green (see Diagram).
3. Using a Heyco tool (P/N #29) compress the insert on the strain relief while pulling outward to remove power cord.
4. Using a Hospital Grade Power Cord ONLY (EH-CO1), measure the length of the leads of the new power cord against the ones removed.
5. Before installing new terminal on new cord, remove the strain relief from the old cord and reinstall it onto the new cord.
6. Install new terminals (Pink faston connectors (EK-CT18)) onto black, white and green wires. Ensure that wires are properly stripped of outer insulation and that strands of wire are not cut off.
7. Install power cord back into opening at side of case using Heyco tool to compress strain relief.
8. Connect terminals to receptacle as found originally. (see Diagram)
9. Secure the green lead to chassis case grounding stud ensuring that star washer is in the correct position, washer goes on stud, then green ring-terminated wire, followed by kep nut
10. Reinstall rear cover.
11. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.



PRODUCT(S):	Stage IV & Millennium
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus 23-SM-MIL3 / 23-SM-MIL3-Plus / 24-SM-MILTT / 24-SM-MILT-Plus
SERVICE:	Replace Exterior Fuse, AC Power Switch and/or AC Power Input
SENTECH REPLACEMENT PART #:	ES-F-3, ES-S1, EK-SF

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

Replacement of exterior fuse

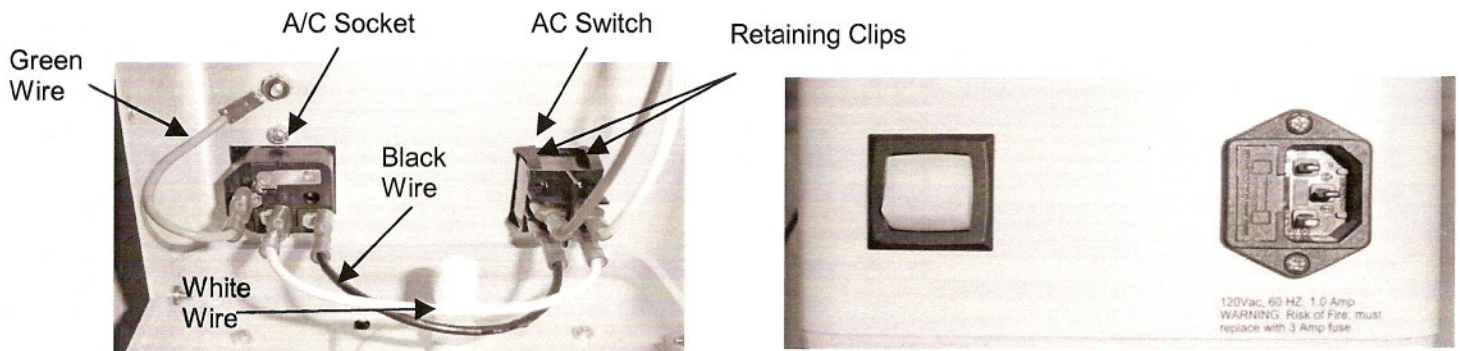
REPAIR PROCEDURE:

1. Remove fuse retainer by pulling on tab in receptacle, replace blown fuse with the exact same value.
2. Reinstall fuse retainer.
3. Plug unit in, turn on, check display and touch pad operation. If problems are encountered, contact SenTech Customer Service at 954-739-4972.

Replacement of AC power switch and Socket

REPAIR PROCEDURE:

1. Place controller so that it is lying on it's front. Using an 8" long #2 Phillips screwdriver, remove rear cover unit by removing the ten (10) 6/32 x 3/8 screws. Note: Two of the screws are located in the center of the two black rubber bumpers on the rear cover.
2. Remove the lower left side wrapper to bottom cover screw and the two (2) 8-32-3/8 screws on the left side of the wrapper case from the unit.
3. Using a pair of diagonal cutters and screwdriver, cut away tabs from top and bottom of switch and push switch out of the case. Disconnect and reconnect switch wires from outside of case. Reinstall switch after reconnecting wires by pushing switch back into case.
4. Using a #1 Phillips screwdriver and a pair of pliers, 4-40 nut driver or hemostat, remove the two (2) screws and nuts from the A/C socket. Pull socket from case and disconnect wires from socket and reconnect wires to new socket. Push socket back into place observing correct orientation. Reinstall using screws and nuts.
5. Please note to observe proper polarity of AC connections to receptacle black, white, and green wires prior to removal.
6. Ensure that wires are installed on the correct terminal as indicated by original receptacle. (see Diagram below)
7. Reinstall rear cover.
8. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.



PRODUCT(S):	Stage IV & Millennium
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus 23-SM-MIL3 / 23-SM-MIL3-Plus / 24-SM-MILTT / 24-SM-MILT-Plus
SERVICE:	Touching up Paint
SENTECH REPLACEMENT PART #:	N/A

CAUTION! BEFORE ATTEMPTING ANY SERVICE, DISCONNECT THE CONTROLLER FROM ITS POWER SOURCE. FAILURE TO DO THIS COULD RESULT IN A SEVERE ELECTRICAL HAZARD.

REPAIR PROCEDURE:

1. There are two colors of touchup paint.
2. Paint can be matched at any home improvement store by taking part of the case for color analysis.
3. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

PRODUCT(S):	Stage IV & Millennium
PART #:	22-SM2000 / 23-SM3000 / 23-SM3000 Plus 23-SM-MIL3 / 23-SM-MIL3-Plus / 24-SM-MILTT / 24-SM-MILT-Plus
SERVICE:	Replacement of Fan
SENTECH REPLACEMENT PART #:	MF-60, MF-GFR

1. Place unit on it's front.
2. Using an 8" long #2 Phillips screwdriver, remove the ten (10) 6/32 x 3/8 screws from the rear cover. Note: two of the screws are located in the center of the two back rubber bumpers.
3. On the lower right side rear remove 6/32 flat head screw.
4. Expand the lower right side of case as necessary to obtain access to the fan. Note: On later models you must remove the two (2) #8x3/8 screws located on the upper right side of case.
5. Using a #1 Phillips head screwdriver, a 1/4 inch box or open end wrench or a long pair of hemostats, remove the four (4) 4x40 x1" screws and nuts from the retainer and cooling fan.
6. Disconnect the fan wire connector from the PCB located in the upper right corner. Note: Observe the proper orientation of connector on the PCB for reinstallation.
7. Remove the disconnected fan from the case and discard.
8. Install filter and retainer (See **Diagrams 1** and **2** for hinge placement and correct orientation of retainer assembly to bottom cover).
9. When re-installing new fan, note the air flow and fan rotation arrow marks on the side of the fan. The air flow direction arrows point upwards (into the unit). Reinstall the four (4) 4x40x1" screws and tighten until fan is snug. DO NOT overtighten or fan will bind.
10. Reinstall the fan connector to the PCB observing proper orientation. See **Diagram 3**
11. Visually check for completeness before proceeding with power up and controller operational checks.
12. Reinstall lower right rear 6/32 flat head screw then the rear cover using the ten (10) 6/32 x 3/8 screws and two black bumpers.
13. Perform Biomed and Release Testing. If problems are encountered, contact SenTech Customer Service at 954-340-0500.

NOTE: On older models where the cooling fan has been mounted on the left side of the bottom cover, the cooling fan must be relocated to the right side of the bottom cover. Make sure the air flow arrow on the cooling fan is pointing into the unit.

Diagram 1

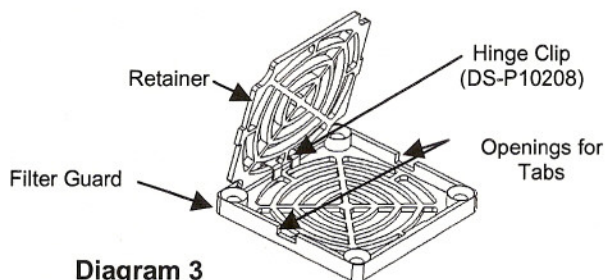


Diagram 2

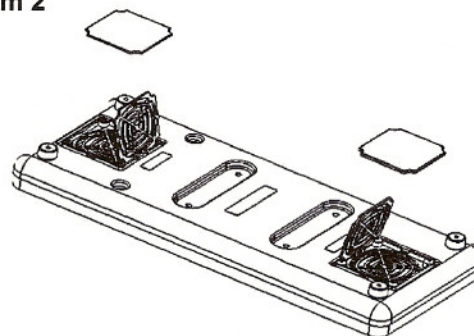
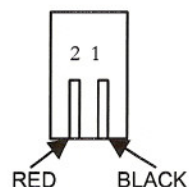
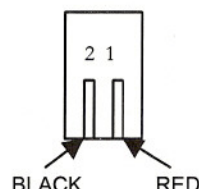


Diagram 3



For SM2000/SM3000



For MILLENNIUM

Testing

All electronic controllers are calibrated and tested for electrical safety (Bio-Med) at the time of release. However, it is recommended that they are checked annually. When performing the testing specified in this section, the following requirements must be met:

- Testing should only be done by qualified and trained personnel
- Test equipment must meet the testing requirements, i.e., equipment can perform tests required at the specified ranges
- Test equipment must be operated, maintained & calibrated according to the instructions provided by the manufacturer of the test equipment.
- The electronic controller should **never** be opened during testing
- Test records should be maintained by serial number

Electrical Safety Testing (Bio-Med)

The Bio-Med specifications* for your system are presented in the table below:

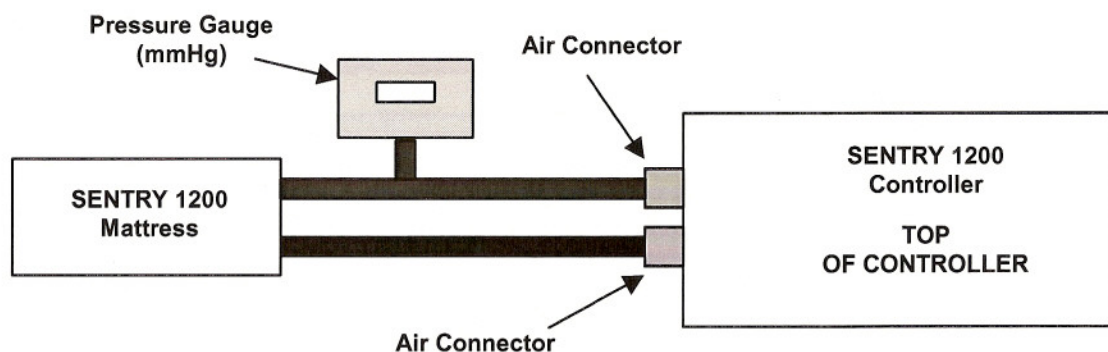
PRODUCT	SENTRY 1200 PRIMARY CARE	STAGE IV 2000 STAGE IV 3000	MILLENNIUM
GROUND TEST	N/A (Double Insulated Plastic Case)	< 0.1 Ohm	< 0.1 Ohm
LEAKAGE TEST	≤ 0.1 mA	≤ 0.1 mA	≤ 0.1 mA
INSULATION WITHSTAND	≥ 1,240 Volts	≥ 1,240 Volts	≥ 1,240 Volts
FUNCTIONAL TEST	≤ 0.2 Amps	≤ 1.0 Amps	≤ 1.0 Amps

* Factory testing is done on a Biddle Tool & Appliance Tester, Model # AVTM 23-30J.

Calibration Testing

SENTRY 1200 -

1. Turn on the controller.
2. Using the FUNCTION and THERAPY key, select BED FLOAT on the LCD display.
3. Using the UP arrow key, increase the pressure to 50 mmHg. Even, Odd should display "0", however a fluctuation to "1" is acceptable, but if reading is greater than "1", controller must be returned to SenTech for service.
4. Connect the electronic controller to a **SENTRY** mattress.
5. Attach the Pressure Gauge to one of the hoses that supplies air to the mattress as shown in the diagram below:

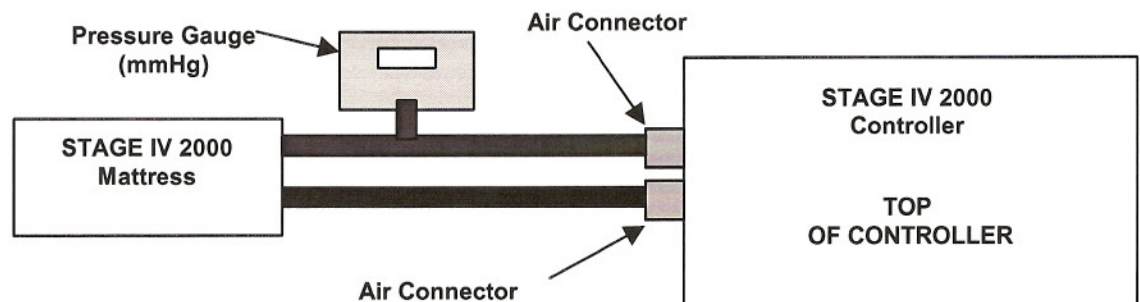


6. Wait for the pressure displayed on the LCD display to reach 50 mmHg.
7. **Acceptance Criteria:** Reading on Pressure Gauge = 48-52 mmHg.
8. Repeat Steps 5-7 for the other air hose.

Calibration Testing (Continued)

STAGE IV 2000 -

1. Turn on the controller.
2. Select STAGE IV and make sure that the ALTERNATING PRESSURE light on the control panel is "off".
3. Open the black cover on the control panel and under "Pressure Settings" increase the pressure to 50 mmHg using the UP arrow key. A and B pressure displays should read 0-2. If display reads greater than 2, controller must be returned to SenTech for service.
4. Connect the electronic controller to a **STAGE IV 2000** mattress by attaching each of the two (2) hoses to its corresponding color-coded air nozzle.
5. Attach the Pressure Gauge to one of the hoses that supplies air to the mattress as shown in the diagram below:

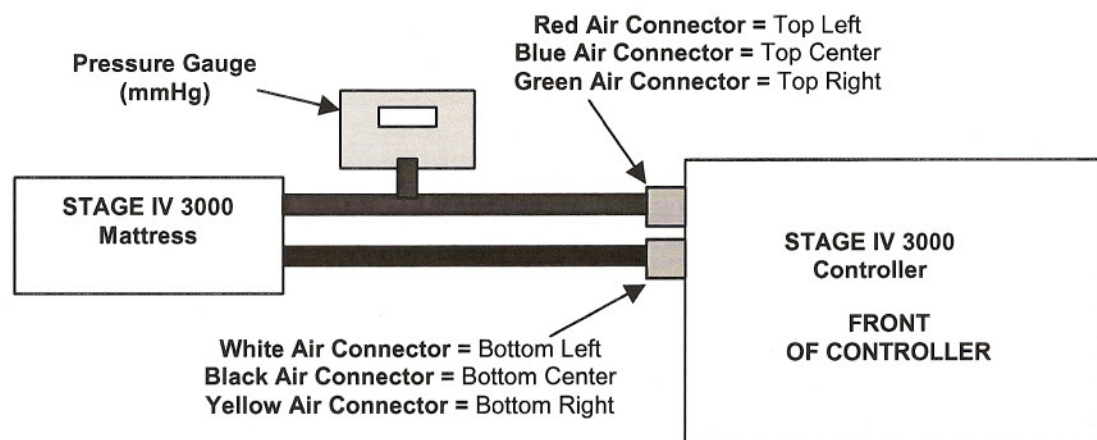


6. Wait for the measured pressure display on the control panel to reach 50 mmHg.
7. **Acceptance Criteria:** Reading on Pressure Gauge should = 48-52 mmHg.
8. Repeat 5-7 for the other air hose.

Calibration Testing (Continued)

STAGE IV 3000 -

1. Turn on the controller.
2. Select STAGE IV and make sure that the ALTERNATING PRESSURE light on the control panel is "off".
3. Open the black cover on the control panel and under "Pressure Settings", select HEAD and increase the pressure to 50 mmHg using the UP arrow key. A and B pressure displays should read 0-2. If display reads greater than 2, controller must be returned to SenTech for service.
4. Connect the electronic controller to a **STAGE IV 3000** mattress by attaching each of the six (6) hoses to its corresponding color-coded air nozzle.
5. Repeat "Step 3" for TRUNK and FOOT.
6. Attach the Pressure Gauge, as shown in the diagram below, to the hose that is connected to the RED color-coded air connector.

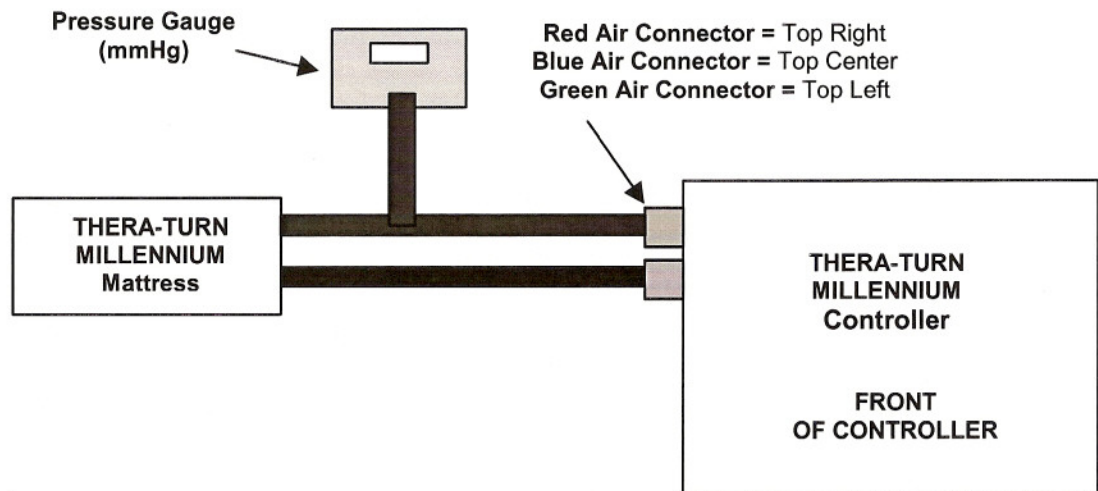


7. Wait for the pressure displayed on the control panel to reach 50 mmHg.
8. **Acceptance Criteria:** Reading on Pressure Gauge should = 48-52 mmHg.
9. Repeat Steps 6-8 for the BLUE, GREEN, WHITE, BLACK, and YELLOW air connectors.

Calibration Testing (Continued)

THERA-TURN MILLENNIUM -

1. Hook the electronic controller to a **THERA-TURN MILLENNIUM** mattress by attaching each of the six (6) hoses to its corresponding color-coded air nozzle on the controller and the CPR assembly to the mattress.
2. Turn on the controller.
3. Depress Max Firm.
4. Attach the Pressure Gauge, as shown in diagram below, to the hose that is attached to the "RED" color-coded air connector.



5. Wait for the system to stabilize.
6. **Acceptance Criteria:** Reading on pressure gauge should = 48-52 mmHg
7. Repeat Steps 4-6 for the BLUE and GREEN air connectors.

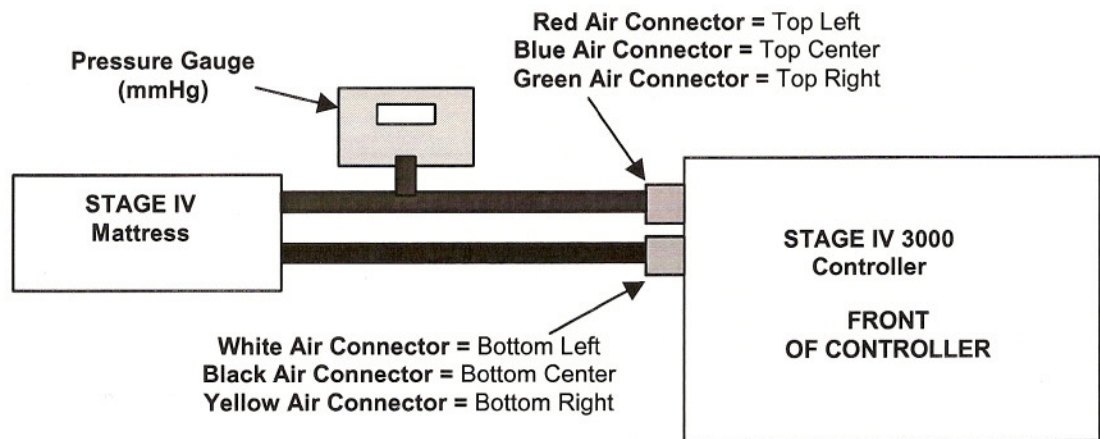
Calibration Testing (Continued)

STAGE IV MILLENNIUM 3 -

1. Turn on the controller.
2. Select THERAPY and make sure that FLOAT mode is displayed on the LCD.
3. Depress and hold the ENTER key, then depress the ADVANCED key. "ADVANCED" will be displayed above Max Firm pressure display. Note: Record the Max Firm pressure setting.
4. Use the INCREASE and DECREASE keys to set Max Firm pressure to 50mmHg. Depress ENTER to update the information
5. Depress Max Firm and wait for the mattress to fill and the controller to display the following:

A	50	50	50
B	50	50	50

6. Attach the Pressure Gauge, as shown in the diagram below, to the hose that is connected to the RED color-coded air connector.



10. Wait for the pressure displayed on the control panel to reach 50 mmHg.
11. **Acceptance Criteria:** Reading on Pressure Gauge should be ± 2 mmHg of displayed pressure.
12. Repeat Steps 6-8 for the BLUE, GREEN, WHITE, BLACK, and YELLOW air connectors.
13. Repeat steps 3-4 to reset Max Firm pressure to the value recorded at the beginning of the test.

Release Testing

1. After repair is complete and Biomed testing has been performed, plug in unit and turn on.
2. Check display for full function.
3. Press each touchpad button and verify appropriate response.
4. Attach unit to corresponding mattress or air cells and set unit to static (float) and verify that **display pressure** is within ± 2 of **set pressure**.
5. Verify Max Inflate, where appropriate.
6. Set unit to alternating pressure (cycle) and verify that unit alternates over time and that final **display pressure** is within ± 2 of **set pressure**.

NOTE: for additional information on display and/or set pressures, please refer to product Operating Instructions.

Service Reporting

After receiving authorization, the customer documents the Service completed on SenTech products using form 415-011, *Customer Service Work Order* (See **Appendix 2**).

Customer faxes the completed CSWO to SenTech Customer Service at the *end of each week*.

Appendix 1

RELEASED

SenTech Medical Systems, Inc. <i>Proprietary & Confidential</i>	Document: PRODUCT SERVICE AUTHORIZATION		
	Document Number: 415-011A	Revision: 01	Page: 1 of 1
Effective Date: 2/2/05	Document Owner: Operations	Change Control #: CR-441	

CUSTOMER INFORMATION

Customer: _____ Phone: _____

Address: _____ City: _____

State: _____ Zip Code: _____

Customer Type: ☐ Distributor ☐ Hospital ☐ Nursing Home ☐ Other: _____**SenTech Product Currently Owned (Check All That Apply)**☐ Primary Care ☐ Sentry ☐ Millennium ☐ Stage IV 2000/3000 ☐ Air Chair: _____**Test Equipment Inventory:** Do you currently own or have access to the following equipment:☐ Electrical Safety/Bio-Med Tester? Make: _____ Calibration Date: ____/____/____☐ Pressure Meter (50mmHg)? Make: _____ Calibration Date: ____/____/____**SERVICE PERSONNEL INFORMATION**

Name: _____ Title: _____

Service Competency (For the person that will servicing SenTech products, list their competencies below and, where appropriate, attach/reference supporting competency documents, such as resumes, training certificates, diplomas, work experience, etc):

SERVICE AGREEMENTI agree to comply with the requirements set forth in SenTech procedure 315-011M, *Product Service Manual*.

Agreed to By: _____ Date: ____/____/____

Name: _____ Title: _____
(Print)**To Be Completed By SenTech Only**Authorization Granted: ☐ NO ☐ YESAuthorization Exception: ☐ NO ☐ YES If YES, reference Change Request #: CR-SenTech Service Training Completed: ____/____/____ Results: ☐ PASS ☐ FAIL

Authorized By: _____ Date: ____/____/____

Comments: _____

Appendix 2

RELEASED

SenTech Medical Systems, Inc. <i>Proprietary & Confidential</i> Effective Date: 2/14/05	Document: CUSTOMER SERVICE WORK ORDER -		
	Document Number: 415-011	Revision: 01	Page: 1 of 1
	Document Owner: Operations		Change Control #: CR-517

SERIAL #:

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Date Received: ____/____/____

Product Description: _____

Customer: _____ Phone: _____

Address: _____ City: _____

State: _____ Zip Code: _____

Death/Injury Reported? ☐ No ☐ Yes If yes, contact SenTech Customer Service *Immediately*.

Serviced/Tested By:

Print Name	Signature	Date

Service Record:

#	SERVICE COMPLETED	PARTS USED	QTY
1			
2			
3			
4			
5			

COMMENTS/NOTES: _____
